

# Setup VSCode and Copilot

## 1. Install Python

- Download and install Python from [python.org/downloads](https://python.org/downloads).
- During installation, make sure to check **"Add Python to PATH"**.
- Verify installation by running in a terminal:

```
python --version
```

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## 2. Install Visual Studio Code

- Download and install VS Code from [code.visualstudio.com](https://code.visualstudio.com).

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## 3. Install Required VS Code Extensions

Open VS Code, press **Ctrl+Shift+X** (or **Cmd+Shift+X** on macOS), and install these extensions:

1. **Python** (by Microsoft)
2. **Jupyter** (by Microsoft)
3. **GitHub Copilot**
4. **GitHub Copilot Chat** (optional, but useful for in-editor chat help)

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## 4. Install Jupyter Tools in Python

In a terminal or the VS Code terminal, run:

```
pip install notebook ipykernel jupyter
```

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## 5. Create a GitHub Account

- Go to [github.com](https://github.com) and create an account.
- You can use your Google account to sign up.

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## 6. Connect VS Code to GitHub Copilot

- In VS Code, open the Command Palette (**Ctrl+Shift+P**) and run:

```
GitHub: Sign in
```

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- Follow the prompts to sign in to your GitHub account.
  - Make sure your GitHub account has Copilot access (subscription or free trial).
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## 7. Open and Run a Notebook

- Create a new file in VS Code with the extension `.ipynb`.
- When prompted, select your installed Python as the **kernel**.
- Add and run a simple test cell:

```
print("Hello from Python notebook with Copilot!")
```

- Press **Shift + Enter** to run the cell.
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## 8. Enable Copilot in Notebooks

If Copilot suggestions don't appear inside notebook cells:

- Open VS Code settings (**Ctrl+,**).
- Search for "Copilot" and make sure **Copilot: Enable for Notebooks** is turned on.

or

- Open a Jupyter notebook (`.ipynb`) in VS Code.
  - Click the **Copilot icon** in the bottom-right status bar.
  - Make sure "Enable Copilot in Notebooks" is turned on.
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## Copilot Chat

You can open the Copilot Chat panel using **Ctrl+I** or by clicking the chat icon in the sidebar.

You can ask Copilot questions such as:

- "Explain this cell."
- "Optimize this code."
- "Why am I getting a KeyError?"
- "Generate code to visualize null values in this dataset."

You can also highlight a section of code, right-click, and choose: **Ask Copilot** → **Explain / Fix / Optimize Selection**

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## Generating Code from Prompts

Inside a code cell:

```
# generate python code to train a decision tree classifier on the iris dataset
```

Press **Enter**, and Copilot will produce the full implementation.

### Data Science-Specific Examples

Task	Example Prompt
Data Cleaning	# remove missing values and encode categorical columns
Visualization	# plot feature importance of the trained model
Model Training	# train a logistic regression and evaluate using accuracy and confusion matrix
Exploratory Data Analysis	# summarize numerical columns and plot histograms

## 4. Controlling Copilot Behavior

Use the **Command Palette (Ctrl+Shift+P)** and search for:

- **Copilot: Enable/Disable**
- **Copilot: Open Chat**
- **Copilot: Explain This Code**

You can also control Copilot per language in: **File** → **Preferences** → **Settings** → **GitHub Copilot**

## 5. Troubleshooting

Issue	Solution
No suggestions appearing	Ensure you are logged in and the extension is enabled
Notebook kernel not found	Install Python and select the correct environment in VS Code
Chat not available	Install the <b>GitHub Copilot Chat</b> extension
High CPU usage	Disable inline suggestions temporarily

## 6. Example Workflow

Example of using Copilot during data analysis:

1. Type:

```
# load the Titanic dataset and preview it
```

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Copilot writes code using pandas.

2. Then type:

```
# visualize survival rate by gender
```

Copilot writes the seaborn code.

3. Then type:

```
# train a random forest classifier and evaluate accuracy
```

Copilot writes the complete model training and evaluation code.

This workflow makes it ideal for interactive teaching or guided lab sessions.

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## 7. Recommended Settings

In your `settings.json` file (open via **Ctrl+Shift+P** → **Preferences: Open Settings (JSON)**):

```
{
  "github.copilot.enable": {
    "*": true,
    "plaintext": false,
    "markdown": true,
    "notebook": true
  },
  "editor.inlineSuggest.enabled": true
}
```